Keeping Dust Down and Growth Up in Doña Ana County

A Plan for Reducing Dust, Sustaining Growth, and Improving Health and Vistas in Doña Ana County

The Problem:

High dust levels in Doña Ana County exceed health standards.

This is a call to action – not a punishment!

The Solution:

Control man-made sources of dust when and where possible and understand that Mother Nature will win sometimes!

What is the Air Quality in Doña Ana County?

* Throughout most of the year, the air quality is very good and considered clean.
* However, on days when winds are high, DUST levels are usually high enough to exceed standards!
* Since 1996, the County has experienced many exceedances of the National Standard!
* Most of the exceedances recorded have been caused by HIGH WINDS!

Why control human-caused sources of DUST when there is so much windblown DUST caused by nature?

* While human activities are not the only cause of windblown DUST, it can be a significant part of it!

* Because human activities tend to occur in more populated areas, and any DUST they create can more likely get into people's lungs and affect health.

Just where is the windblown DUST coming from?

- **Consider looking at dust picked up under different wind conditions.**

  →when the wind is really howling, we probably can't do much about controlling dust. It may be coming all the way from Arizona.

  →But, what about the more normal blustery spring day.

  – Our monitors have shown dust levels can be unhealthful on those days too.

Just where is the windblown DUST coming from?

We encourage you to look around your neighborhood and across the county on blustery spring days

- From where are dust clouds rising?
- Are dust clouds worse in town or out of town?
- Over vacant lots, fields, work sites, or desert lands?

What do you see?

What do you think can be reasonably done to reduce this dust?

Please give us your suggestions!

Why is DUST a public health issue?

* Under the Federal Clean Air Act (1970), EPA established maximum standards for six major air pollutants to protect public health.
* Particulate matter is one of the six pollutants.
* The standards were set based upon health criteria.
* Particulate matter, or PM10, refers to particles less than or equal to 10 microns in diameter
    * About 1/7 the diameter of a human hair.
* PM10 is made up of many things such as dust, smoke, and soot.

Why is DUST a public health issue?

When inhaled, these tiny particles can lodge deep in the lungs and can:

* increase breathing problems
* damage lung tissue
* aggravate existing health problems

PM10 pollution can also:

* reduce visibility, resulting in accidents.
* impair the health of animals and vegetation.
* reduce crop production.
* reduce the quality of life.

What is PM10?

Particulate matter pollution consists of very small particles floating in the air. Of greatest concern to public health are the particles small enough to be inhaled into the deepest part of the lungs. These particles are less than 10 microns in diameter, which is about 1/7 the thickness of a human hair.

PM10 is a mixture of materials that can include smoke, soot and dust. The high levels measured in Doña Ana County are almost all dust.

Studies of Health Effects of High Dust Levels

Two Key Studies-

where the high levels of particulate air pollution (PM10) were dust, not smoke or soot.

1. Columbia Basin Study
   - Dust storms in the arid plains of eastern Washington State
   - Results: More bronchitis and sinusitis (sinus infections)
   - "…we found a 3.5% increase in the number of daily emergency room visits for bronchitis for each 100µm/m^3 increase in PM10"
   - "…there was 4.5% increase in the number of emergency room visits for sinusitis for each 100µm/m^3 increase in PM10"
   - Reference: "Surveillance for Dust Storms and Respiratory Diseases in Washington State, 1991", by B.J. Hefflin and others, 1994 *Archives of Environmental Health*, vol. 49, pp. 170-174.

Studies of Health Effects of High Dust Levels

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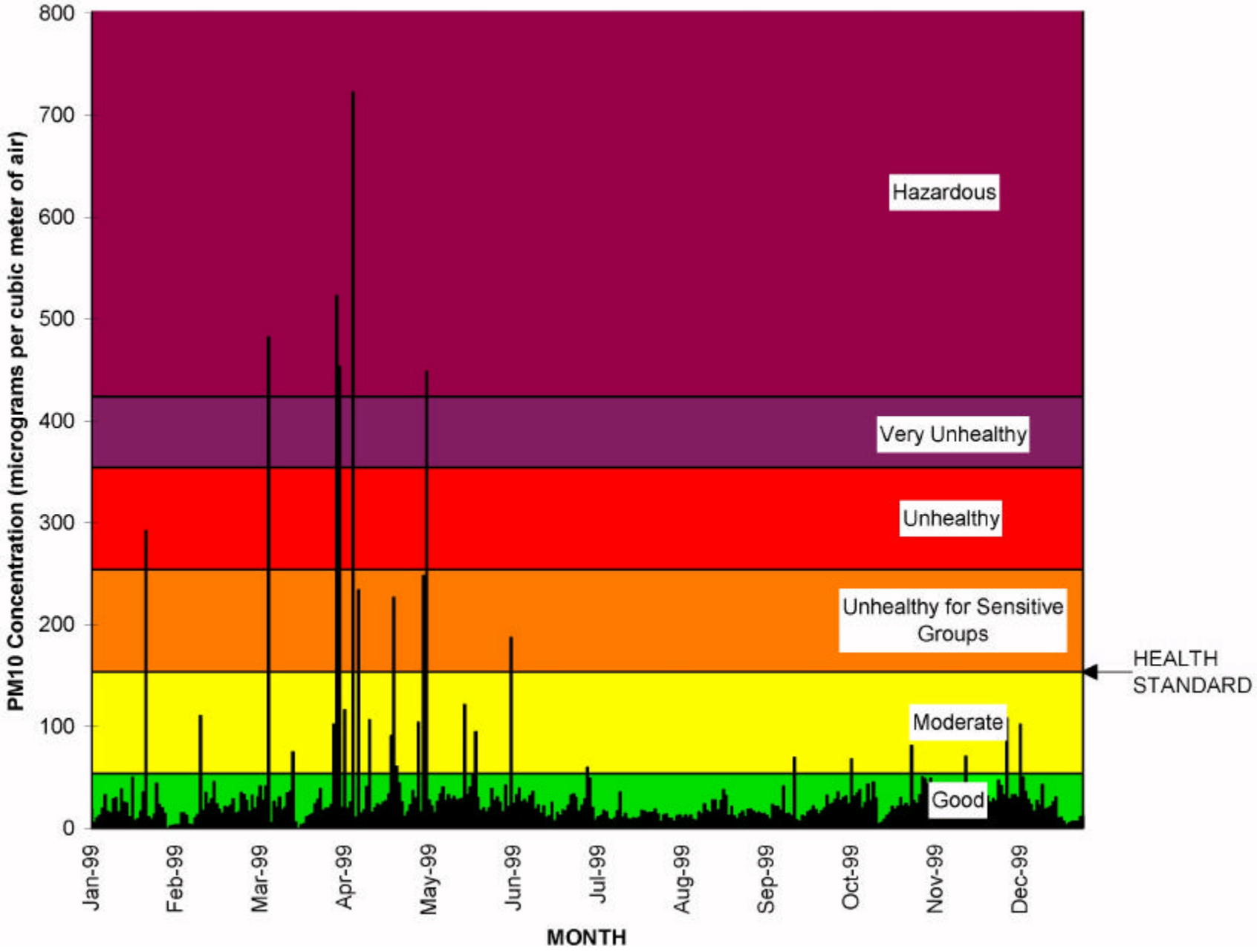
2. Anchorage Study

- High PM10 mostly dust from unpaved roads, road sanding, vehicular traffic, and ashfall from volcanic eruptions
- Results: More asthma attacks and upper respiratory disease
- "The results show that an increase of 10μm/m^3 in PM10 resulted in a 3-6% increase in [outpatient doctor and ER] visits for asthma and a 1-3% increase in visits for upper respiratory diseases"
- Reference: "Particulate Air Pollution and Respiratory Disease in Anchorage, Alaska", by M.E. Gordian and others, 1996 *Environmental Health Perspectives*, vol.104, pp. 290-297.

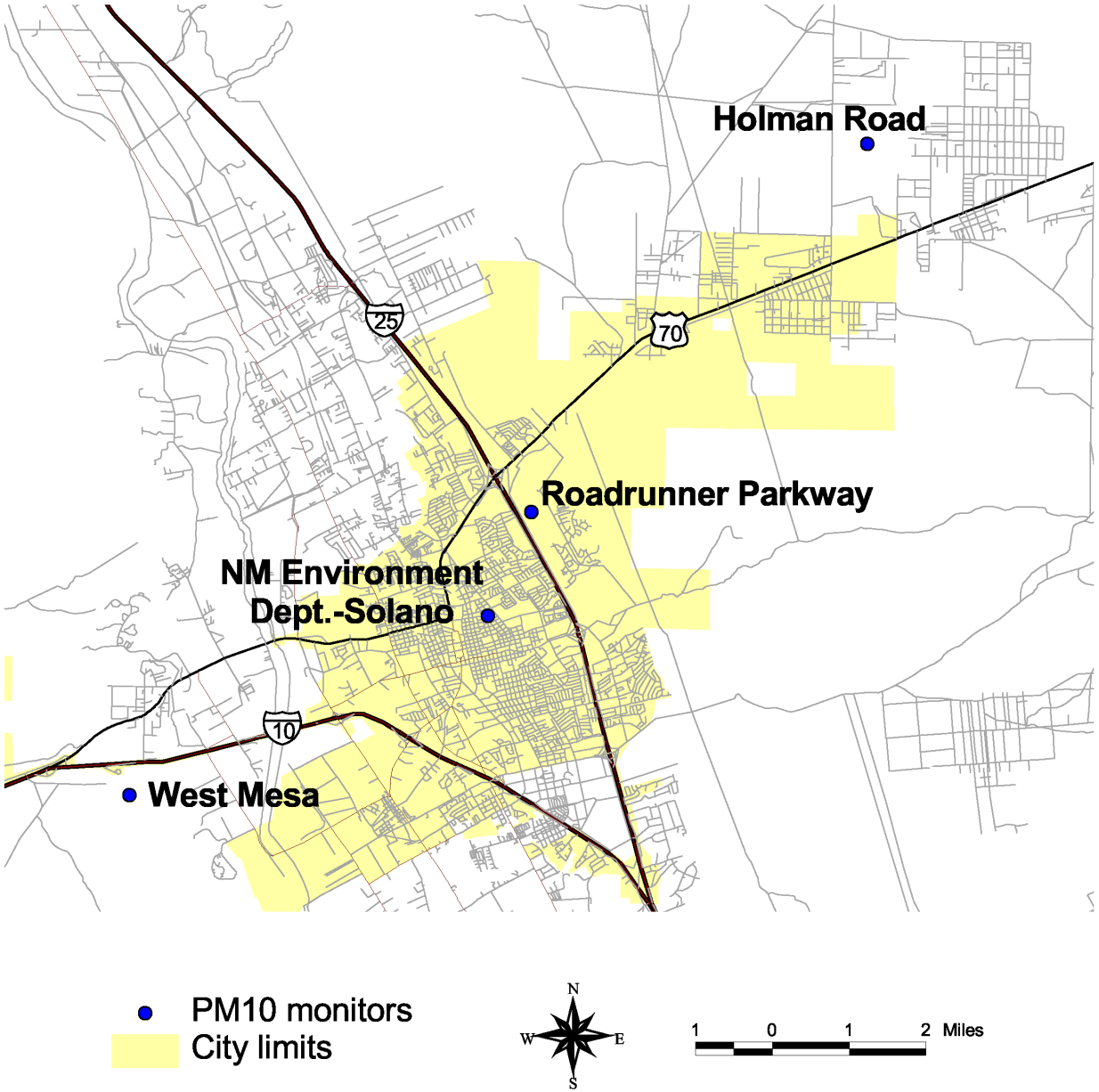
Las Cruces East Mesa: Holman Road Monitor

1999 Air Quality Index

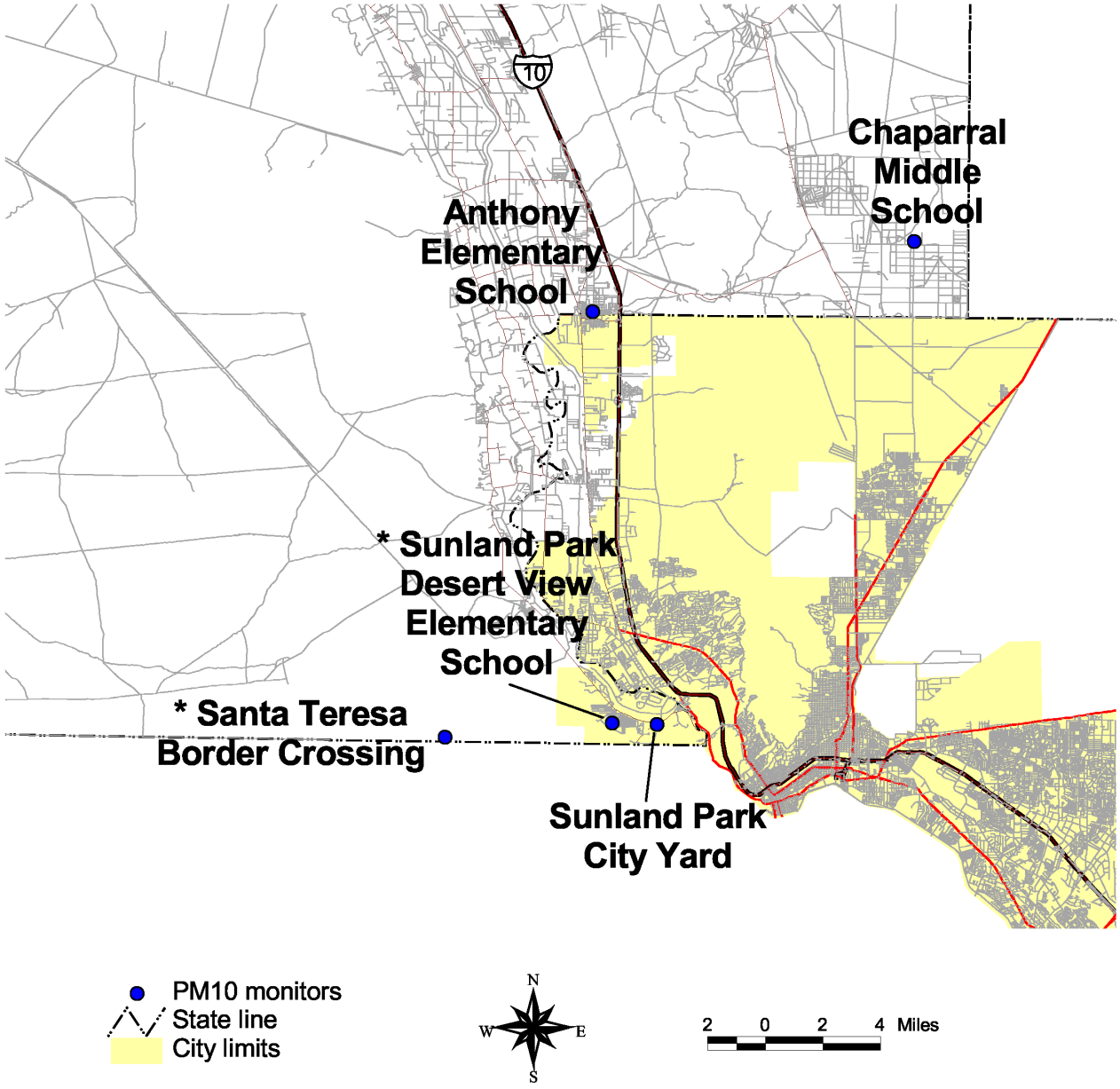


AIR QUALITY CATEGORY (for PM10)	POTENTIAL HEALTH EFFECTS	RECOMMENDED PRECAUTIONS
Hazardous	Serious risk of respiratory symptoms and aggravation of lung disease, such as asthma; respiratory effects likely in general population.	Everyone should avoid any outdoor exertion; people with respiratory disease, such as asthma, should remain indoors.
Very Unhealthy	Significant increase in respiratory symptoms and aggravation of lung disease, such as asthma; increasing likelihood of respiratory effects in general population.	People with respiratory disease, such as asthma, should avoid any outdoor activity; everyone else, especially the elderly and children, should limit outdoor exertion.
Unhealthy	Increased respiratory symptoms and aggravation of lung disease, such as asthma; possible respiratory effects in general population.	People with respiratory disease, such as asthma, should avoid any outdoor activity; everyone else, especially the elderly and children, should limit outdoor exertion.
Unhealthy for Sensitive Groups	Increasing likelihood of respiratory symptoms and aggravation of lung disease, such as asthma.	People with respiratory disease, such as asthma, should limit outdoor exertion.
Moderate	None	None
Good	None	None

Las Cruces PM10 and PM2.5 Monitors
operated by the NMED Air Quality Bureau



Southern Dona Ana County PM10 monitors
operated by the NMED Air Quality Bureau



* PM10 monitoring at the Santa Teresa Border Crossing and Sunland Park Desert View Elementary School sites ended in 1998

Public Health Education and How Dust Affects Your Health

Health and Dust Storms Brochure; we put them in public places, such as:

* Schools
* NMSU Extension Office
* County and City Buildings
* Border Health Office
* NMED Field Office
* Hospitals and Clinics

Public Health Education and How Dust Affects Your Health

We will have radio spots and newspaper articles to tell you when the dust season occurs, and that there are health concerns when dust storms occur.

We will explain who is affected by dust storms and how to protect yourself from excessive dust.

We will have more OPEN HOUSES!

Is there anything else we can do?

Your suggestions are WELCOME!

Things that could happen; Things that could be GOOD for you!

Improved visibility on windy days.

♪ I can see clearly now the haze is gone … ♫

Improved air quality, reducing watery eyes and difficulty in breathing.

♪♪ I can breath deeply now the dust is gone … ♫

Improved air quality lets people with asthma and other breathing problems breath easier on windy days.

♫ Gonna be a bright, bright, sun shiny day! ♪

Things that could happen; Things that could be GOOD for you!

Improve "marketability" of Doña Ana County as a family and retirement community, and as a good, healthy place to live!

Shows a community dedicated to sustained growth and development.

Shows a community empowered for sustaining New Mexico's natural beauty.

More local control for local environmental issues, less federal control.

Things that could happen; Things that could AFFECT you!

* Increased local TAXES for public project DUST control.

* Cleared, undeveloped lots may require some type of long-term DUST control.

* Highway projects may be more expensive if required to use short/long-term DUST control.

Things that could happen; Things that could AFFECT you!

* New local rules requiring DUST control.

* Additional costs for DUST control, such as phased construction for large development projects that disturb many acres of ground.

* Appropriate DUST control during and after construction.

So what happens when too many exceedances occur?

We now have two choices:

Non-attainment designation by EPA

OR

Natural Events Policy

What is Non-attainment?

Non-attainment = traditional way of dealing with pollution

* controls pollution factories, refineries, cars
* reduces pollution from industries and motor vehicles
* poses possible negative economic effects

Besides, this traditional approach may be an ineffective way of dealing with a PM10 problem due to blowing dust raised by high winds.

How did the Natural Events Policy come about?

Western States joined forces with EPA to develop a more common-sense policy to address high particulate matter pollution caused by Natural Events.

The three most common Natural Events affecting air quality with particulate matter are:

* Volcanoes & Earthquakes 
* Wildfires 
* High Wind Events (DUST Storms) 

How does the Natural Events Policy help states meet the PM10 standards.

EPA's Natural Events Policy provides additional flexibility to states and local governments in meeting the standards, while still providing increased protection for public health.

This approach gives more control, and responsibility, to local governments and agencies.

How does the Natural Events Policy help states meet the PM10 standards.

This is totally unlike the traditional approach of "non-attainment" designation!

EPA will excuse those exceedances caused by uncontrollable natural events, if an adequate Plan is in place!

For Doña Ana County, getting these exceedances excused would keep the area from being designated "non-attainment"!

What needs to be done under the Natural Events Policy?

The State Air Quality Bureau and local governments are required to develop a plan to protect public health.

The plan is called a Natural Events Action Plan (NEAP).

What needs to be done under the Natural Events Policy?

A NEAP includes the following parts:

* Document when and to what extent natural events affect PM10.
* Inform the public about the harmful effects of particulate matter.
* Minimize public exposure to high levels of PM10 using notification and health advisory program.
* Notify the public of when the air quality is affected by natural events.
* Actions needed to reduce particulate matter (when and where) possible during natural events

What needs to be done under the Natural Events Policy?

* Actions needed to reduce particulate matter:
  - → Since the exceedances in Doña Ana County are due to blowing DUST, these actions could include reducing the amount of loose, uncovered soils in areas such as:
    - Construction sites
    - Cleared areas,
    - Unpaved parking lots

Again, why should we do a Natural Events Action Plan (NEAP) ??

So people in Doña Ana County will breathe less DUST!

What a Natural Events Action Plan does and does not do!

Does provide alternatives for controlling significant sources of human-caused windblown DUST.

Does understand that mother nature will override our dust control efforts sometimes.

Does not require control of wind!

Does not require control of naturally-occurring windblown DUST!

NEAP vs Non-attainment

* Local community control of local problem
* Flexibility to develop a sensible dust control plan.
* Community still perceived as a clean place to live, play and work.
* **Proactive!!**

* Negotiated with EPA
* Do at least what is required in a NEAP, and maybe more!
* Stigma of an UNCLEAN and UNHEALTHY place to be.
* **Reactive!!**

Non-attainment means that the community will do at least what a NEAP requires (probable more!) under the stigma of being known as a dirty, undesirable place to live!

What types of activities produce WINDBLOWN DUST ?

Windblown Dust in Doña Ana County occurs both from natural and man-made sources.

While DUST is common in undisturbed areas throughout the west, it becomes much more common where natural soils have been disturbed by human activities.

When we remove vegetation the soil is more susceptible to wind, and as a result, more airborne DUST is produced.

The DUST from human activities tends to be concentrated close to populated areas, since that is most often where native soils are disturbed.

Potential sources of WINDBLOWN DUST ?

There are several DUST sources that are commonly encountered in urban and rural areas of the Western U.S.

* Soil disturbance during construction projects.
* Disturbed land areas that are cleared and vacant.
* Unpaved roads.
* Unpaved parking lots and playgrounds.
* Windblown emissions from tilled fields.
* Undisturbed desert areas during the highest winds.
* Military training exercises.
* Unpaved equipment yards.

What Activities may need DUST Control?

*Construction Projects

*Work on paved or unpaved roads

*Using unpaved parking lots

*Work on vacant land or disturbed areas

*Using equipment/materials storage yards

*Using ag. or range management areas

When an activity creates DUST think about using DUST Control!

Possible DUST CONTROL measures

* Dust suppressants
* Paving
* Graveling
* Re-vegetate / xeriscape
* Organic mulches
* Silt fencing / erosion control mats
* Smart timing
* Wind breaks
* Water

These are some we found; can you suggest any more?

→Please let us know your suggestions!!

What is BACM and how do they help control DUST?

Best Available Control Measures (BACM) are methods that can be used to REDUCE WINDBLOWN DUST in areas where native soils have been disturbed and are more prone to erosion by the wind.

The BACM is determined on a case-by-case basis, taking into account technical feasibility and energy, environmental and economic impacts$, as well as other costs$.

The process of determining BACM takes into account what the most common sources of man-made DUST are within the community, when they occur, what measures can be taken to reduce DUST, and the relative cost of these measures related to how effective they are in controlling DUST.

Choosing the right BACM (dust control measure)

BACM include methods that vary greatly in effectiveness and cost$.

Variations may be due to the size of the area requiring DUST control, the slope of area, the type of soil involved, and the amount and type of man-made activity in the area.

Larger areas may require several methods of dust control to adequately address blowing DUST problems.

Community members can use existing or new types of DUST control, but they need to be tested for benefits and drawbacks.

Many BACM have been successfully used in the arid regions throughout the Western U.S.!

What are BACMs and how do they work?

Most BACMs are physical methods of controlling DUST from developed or undeveloped areas within communities.

Many methods attempt to return native soils to a more protected state by revegetation or by replacing natural soil crusts with artificial covers.

However, they also include controlling and/or reducing airborne DUST by practices that minimize the area of disturbed soil.

Considering all these factors, it is possible to develop **Best Management Practices** for specific land uses.

Do you know of a Best Available Control Measure for DUST??

Please let us know!!!

Here are some BACM (dust control measures)

Restoring a natural vegetative cover, xeriscaping or using organic mulches can be an excellent method to reduce windblown DUST.

Chemical DUST suppressants and soil stabilizers can be used to reduce the tendency of fine-grained and loose soils to produce large amounts of windblown DUST.

Erosion control mats, also called geotextiles and erosion control blankets, are materials commonly used to reduce both wind and water erosion on slopes.

SMART TIMING is a method that uses planning so that dust-causing activities are scheduled for those times of the year when there is little wind, or low average wind speeds.

Ask us for a more detailed description of DUST control methods!

THE END

Do you have any:

Questions? **Comments?**

Suggestions? **Concerns?**

Complaints?

Please let us know your thoughts on this matter!!

Contact Kim Kirby or Gail Cooke at 1-800-810-7227 or by email at kimberly_kirby@nmenv.state.nm.us